

has been done during the last decade. I suggest that a public discussion, such as that on "The Origin of Vertebrates," held at the Linnean Society last session, would be valuable.

THE REVIEWER.

In our work in Challenger Office in connection with deep-sea deposits, we are very much impressed with the fact that solution of calcium carbonate is going on in the ocean, not only at great depths, but at all depths from the surface to the bottom wherever dead organisms which secrete carbonate of lime are exposed to the action of the sea water, as was recognised and insisted on by Semper, Murray, Agassiz, and others. We are therefore much interested in the discussion going on in NATURE regarding solution in the lagoons of atolls.

Mr. Wood-Jones considers that there are no actual proofs of solution in the lagoons of atolls, but, at the same time, admits the deposition of calcium carbonate.

The quantity of calcium carbonate present in solution in normal sea water is very small—only 0.12 gram per litre for water of specific gravity 1.026—and no precipitate is obtained on allowing it to stand for any length of time. When, however, sea water has remained for some period in contact with calcium carbonate it may take up a greater amount (up to 0.649 gram per litre). The solution is then supersaturated, and, on being allowed to stand, calcium carbonate is deposited in the crystalline form, and the deposition may go on until the solution contains less than is normally present in sea water.

The first condition, therefore, for precipitation is that more calcium carbonate than is normally present should pass into solution, and this can only occur when the sea water is in contact with a calcareous deposit for some time.

Would Mr. Wood-Jones say where the calcium carbonate which is precipitated in the crystalline form in the interstices of the massive corals in the lagoons comes from, for it is certainly not from the normal sea water which reaches the reefs from the open ocean?

It would appear that Mr. Wood-Jones's arguments against Sir John Murray's theory go rather in support of it.

MADGE W. DRUMMOND.

Challenger Office, Villa Medusa, Boswell Road, Edinburgh, November 17.

The Flight of Birds against the Wind.

In an interesting article (NATURE, November 10) upon bird migration and Mr. Power's recently published "Ornithological Notes," Sir T. Digby Pigott expresses surprise at the latter's conclusions that in the large autumnal migrations the birds invariably fly "almost directly against the wind even when it approaches a stiff breeze."

My observations on the flight of gulls during south-west gales off this coast lead to the conclusion that these birds during their aerial gyrations either face the wind or fly obliquely across the current. They very rarely fly, and, I believe, never soar, with the wind behind them. Perhaps less muscular energy is necessary in the former than in the latter case. Fish in rapid rivers, when not actively moving, according to my experience remain with their heads upstream.

W. AINSLIE HOLLIS.

Hove, November 15.

THE ACCURATE MACGILLIVRAY, ORNITHOLOGIST.¹

"THE accurate MacGillivray" is Darwin's designation of the subject of this notice, and "ornithologist" is the title which, when twenty-three years of age, he himself presaging his own powers, declared it would go hard with him if he did not merit.

Who MacGillivray was does not require to be told to the ornithologist conversant with the literature of

his subject; but the general reader and the superficial bird-man have probably never heard his name. Yet that he was "the greatest and most original ornithological genius save one . . . that this island has produced," is the verdict of so distinguished an ornithologist of our day as Newton. Why MacGillivray's biography should have tarried until his ashes had been fifty-eight years in the tomb is hard to understand, except probably that, born before his time, his contemporaries failed to perceive the genius of the man, or realise the pioneer he was.

William MacGillivray, born in Aberdeen in 1796, was the son of a military surgeon who died on the field of Corunna. The story of his self-denying life is that of not a few Scottish students, who, scantily provided with means, have yet by their indomitable will-power and love of learning achieved distinction, honour, and lasting fame. The future ornithologist's boyhood, from the age of three, was spent in Harris, in the Hebrides, where nature is wild and presents herself in many changing and impressive aspects. In the parish school a few miles from his home, he obtained, "under dull scholastic rule," a good elementary education, but his chief and unconscious preceptors were "the solitudes of nature" and "the moaning voice of streams and winds." At the age of eleven he set out for Aberdeen, to prepare, under more advanced tutors, for his entrance the following year into the University there, with a view to his father's profession. He probably on this occasion, as he invariably did at the beginning and end of the various college sessions, walked all the way athwart Scotland from his landing place on the west coast. When twelve years old he entered King's College, at that time the University of old Aberdeen (as then known), which (until 1860) was distinct from Marischal College, the University (junior by a century) of new Aberdeen. Having graduated M.A., when four years older, he proceeded at once to the study of medicine, of which one of the courses was botany, and with it, as he has recorded, he first began the study of nature "which has been particularly fascinating." A year later he took up zoology. His vacations were thenceforth spent in pedestrian excursions over the Highlands and islands, collecting plants and animals, keenly observing and carefully recording every aspect of nature.

It was during this period that MacGillivray acquired his great dexterity with the scalpel, and became so accomplished an anatomist that he was appointed dissector to the lecturer on anatomy in Marischal College. Unable, however, to resist the call of natural history, he relinquished this not uncongenial post in order to devote himself exclusively to his mistress. As one of the means to "further his cognition of these things," he set out on foot from Aberdeen for London *via* Fortwilliam and Ben Nevis—hardly the direct route—to visit the British and other Metropolitan museums, and observe life by the way. Drenched or dry, tired or otherwise, he never neglected at the close of the day to record fully in his journal the valuable notes he had made. After an 837 mile tramp, full of extraordinary experiences, he reached the capital, "satisfied," as he says, "with my conduct"; and not unjustly so, for his expedition had gone far to mature the youthful enthusiast. His study of the various zoological collections in London convinced him that the methods of classification of modern ornithologists were such as he could not accept. Before he returned to Aberdeen he had formed the resolve "to become the author of a new system," which formed the aim of his life thenceforward. In 1810 or 1820, MacGillivray migrated from Aberdeen to Edinburgh, and as he had recently married, it

¹ "Life of William MacGillivray, M.A., LL.D., F.R.S.E., Ornithologist Professor of Natural History, Marischal College and University, Aberdeen. By William MacGillivray, W.S. With a Scientific Appreciation by Prof. J. Arthur Thomson. Pp. xv+222. (London: John Murray, 1910.) Price 10s. 6d. net.